

Differentiation of society – the emergence of the algorithmic differentiation of society

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Abstract

The aim of this paper is to put forward Luhmann's theory of social differentiation as the way society as a social system has organized internally after it has differentiated itself out of its external environment. The question which it discusses is if we are facing a new form of differentiation triggered by the digital media. To do that the paper put forward Luhmann's theory and the historical forms of differentiation he described. After that the paper shows how the triggering factor, thus in a non-deterministic way, for Luhmann is communication media. A new differentiation form emerges when the dynamic and complexity of society has increased to such an extent, i.e., other forms of differentiation has grown in latency, that a new form can take over. In the paper there is identified a development where the new differentiation form can handle more complexity than the latter, and after the introductory to the theory and the interpretations of it, it is discussed if and how a new form of differentiation is under development. The discussion circle around how to interpretate cotemporally developments as signs of how the new differentiation form works. After the discussion a short conclusion sum up the results of the paper.

Introductory remarks

It is one of the biggest questions in sociology how to describe what society is and how it develops in theoretical terms. The theory of differentiation has long traces back in history of theory and the paper begins with a short history of the theory, just to give a starting point and so it does not look like that the theory direction is invented by Luhmann.

I am pleased to be able to present my interpretation of Luhmann's theory and my thoughts on a possible new kind of basic differentiation structure on this systems theory conference in Dubrovnik, as it has such strong roots leading back to Luhmann himself, and because at the last conference I promised to come up with a coherent account. Luhmann (2000; 2016) does not give a meticulous description of the theory history or for his inheritance and debt, as well as where he differs exactly in his theory from the former theories. He does mention other earlier theories but not so you really know what he has grabbed. This is of course because Luhmann with his systems theory has some theoretical principles like the distinction between system and environment, that makes it possible for him to build up a theory that is only loosely coupled to other theories which he only observes from within his

own theoretical system. Another starting observation is that the theory of differentiation of society itself never is elaborate like in a logical order, it is always en passant even though there is chapters and articles about it in Luhmann's production. There are others who has proposed a new form of differentiation like Gorm Harste's (2010) proposal of the *network-system*, and Dirk Baecker's (2007) concept of *the next society*, but as far as I know, none of them or others, really have tried to put the theory of differentiation together and argued for a new form of differentiation in a consistent way. Therefor I am proud to present this paper, that provide a reconstruction of Luhmann's theory of social differentiation and suggests a new form of basic differentiation of society.

One last thing to mention is that because of the corona lockdown I have only had access to some of my books and especially not to my English Luhmann-books so mostly Luhmann (1995) "Social Systems" is Luhmann (2000) the Danish version, and Luhmann (2012) "Theory of society" is Luhmann (2016) the Danish version.

If I am wrong in any of my assumptions or you have comments or references that could be useful in relation to make the paper into an article, or you have an offer of publishing it please send me an email: imvjet@cc.au.dk When I have an approval from a journal I can have it proofread – and yes - sorry for the not so good English in this version.

Theoretical history

Auguste Comte (1798 – 1857) in his positivism provided a theory of historical development through the so-called law of the three stages. The first is the *religious* stage, where phenomena were explained through the intervention of gods or spirits. The second stage is *the metaphysical or abstract* stage, in which abstract quantities were postulated to explain the phenomena. The third and final stage is the *positive or real* stage. Here the main rule is that the imagination *must be subordinated to observation*. Since Comte the idea of such three stages recur again and again in theories of society (Habermas 1987: 153-154), but where there is almost consensus about the first stage there is more discussion about the next two stages (This is also the case in relation to Habermas 1987). Herbert Spencer (1820 – 1903) is the first to propose *differentiation* to describe social evolution. He applied the concept from biology and describes differentiation as a universal law saying that the development goes from the simple to the complex. In society, the evolutionary process of differentiation consists in division of labor. Spencer describes not only three, but four stages going from the simple, over the compound and the doubly compound to the trebly compound society (Hossain and Mustari 2012: 59).

Émile Durkheim (1858 – 1917) differentiates between mechanic and organic solidarity. Mechanic solidarity is seen in simple religious societies which were differentiated in *segments*: "The clan remains the political unity, and as families are similar and equal, society remains formed of similar and homogeneous segments, although, besides these primitive segments, new segmentations begin to appear, but of the same kind." (Durkheim 1960: 176). In more organized societies based on the division of labor we find organic solidarity. Solidarity is what links individuals to society and in the simple *segmental differentiated society* all individuals follow the same moral, where in the *organized societies* more complex societal structures creates mutual interdependences. The link to biology is still strong but now as an analogy and not as a universal law: "Each organ, in effect, has its special

physiognomy, its autonomy. And, moreover, the unity of the organism is as great as the individuation of the parts is more marked. Because of this analogy, we propose to call the solidarity which is due to the division of labor, organic." (ibid: 131). This is structural functionalism where the functions in society must run through the always already existing structures.

With Talcott Parsons (1902 – 1979) the concept of organization gets a new meaning while *stratification* becomes the main analytical concept for societal differentiation. "Social stratification is regarded here as the differential ranking of the human individuals who compose a given social system and their treatment as superior and inferior relative to one another in certain socially important respects." (Parsons 1940). Following Parsons, stratified systems derive from common values. If there are values, it follows that individuals will be evaluated and placed in a sort of ranking. Stratification can be traced back to Marx and the idea of the class society and nuanced by Weber to a number of more classes, but it is Parsons who, like Durkheim did with segmentary differentiation, describes stratification as a basic principle of societal differentiation. Both Durkheim and Parsons are structural functionalists and sees the various functions in complex societies as depended of some basic structures from which we can deduce functions, e.g. Parsons four types generalized media and the AGIL system (see intro to Parsons 2005).¹

Niklas Luhmann (1927 – 1998) contributes much to the theory, both by combining the former principals (segmentation and stratification) in the same theory, but also by providing a new one, namely functional differentiation.² We will return in detail to functional differentiation, but as the last thing in this paragraph we shall look shortly on a fourth principle of differentiation that Luhmann (2016) includes in his theory which is the *center – periphery* differentiation. This form of differentiation has been worked through within a couple of fields and maybe most thoroughly by Galtung in his structural theory of Imperialism (see Galtung 1971).³ The different forms of differentiation all somehow makes society and societal cooperation possible. We return to all four types and describe them according to Luhmann, who define and described them and drew them together in a plus sum game to describe the society of his days.

Luhmann's theory of differentiation: the principles

In Luhmann's system theory the basic distinction is between system and environment (Luhmann 1995; 2012). He defines differentiation as the unit of the different (2016: 481). Systems differentiation is a repetition of system formation inside systems, so further system/environment-differences can differentiate out within systems (2000: 54). The overall system hereby becomes the internal environment for the subsystems, but in a specific way

¹ Luhmann (2016: 481) mention Georg Simmel (1858 – 1918) as the first one when he explains the concept. For Simmel it is by virtue of division of labor and specialization, that society is differentiated so initially homogeneous groups become heterogeneous. Society is becoming more complex and unmanageable, but at the same time able to perform far more varied functions.

² Functional differentiation has probably always existed and probably lies in the very idea of division of labor. Yet my studies have not shown me a single instance of the concept among any of the structural functionalists. Either way, Luhmann is the first to put forward functional differentiation as the fundamental form of modern society, as the form that takes over after stratification, which itself took over after segmental differentiation.

³ This way of using the principle is too transcendental for Luhmann, who uses the differentiation form in his own meaning.

for each subsystem. The system/environment-differences are repeated inside the overall system which hereby multiplies itself internally as a plurality of system/environment-differences (ibid). It is not a question of separation into parts, but of each subsystem reconstructing the whole system to which it belongs by its own system-specific difference between system and environment (2016: 483). Every difference between a subsystem and the internal environment is once again the whole system - but only in different perspectives. Therefore, system differentiation is a procedure for increasing complexity - with major consequences for what can still be observed as the unit of the overall system. It is in the sense of differentiation that it can be seen as a unit, it holds the different together; it is different and not indifferent.

To the extent that the differentiation is brought on a unified principle, like hierarchy, one can therefore also read the unity of the system by the design principle of its differentiation (2000: 54). Even though systems' form of differentiation can define rough forms of differentiation like hierarchy, it does not mean that other forms of systems formation are not possible (2000: 55). Differentiation enables the understanding of units and differences as the result of processes, e.g., of evolution (2016: 481). As a mechanism, differentiation maintains coherence during growth (2016: 482). The process of differentiation can happen spontaneously or as a result of evolution, and take advantage of opportunities to launch structural change. (2016: 483). No coordination is required by the overall system, nor that all operations that are carried out in the overall system are distributed on the subsystems. As an example, Luhmann (2016: 484) mentions that even in highly differentiated societies, much free interaction takes place. Any change in a subsystem means a change in the environment of other subsystems, resulting in an explosive reaction pressure which the subsystems can only protect themselves against with "high walls of indifference" (2016: 484). Differentiation therefore leads to both increasing dependencies and independencies, which the subsystems treat as operationally closed autopoietic systems (2016: 485). In the system-to-system relations, for example between family and school, only a part of the world receptively society gets visible, but precisely this fragmentation makes it possible subsequently to observe each of the systems as systems-in-their-own-environment and their respective observations (ibid).

In the system-to-system relations allowed by a differentiated social order, there can only be structural couplings that do not abolish the autopoiesis of the subsystems, e.g., the relationship between villages in segmented societies, estates in stratified societies and functional systems in modern societies (2016: 486). What in the relationship between the subsystems functions as a structural coupling, is at the same time a structure for the overall social system. Therefore, Luhmann (2016: 486) characterizes societal systems by their form of differentiation, for it is the kind of structural formation that at all times determines and restricts what structural couplings are possible in the relationship between the subsystems. It never happens that a subsystem within a form of differentiation is replaced by a subsystem from another form of differentiation, because it would destroy the form, i.e., the marking of difference: Within a segmented organization, a family can achieve special, even significant, distinction (such as a clergy family or a chieftain family), but it cannot be replaced by nobility, as it would require a transition from exogamy to endogamy, i.e., a completely different overall organization. This is like it would not be possible to replace nobility with the state or science as subsystems in a stratified society (2016: 494). In such

fracture surfaces, to become possible, evolution need a kind of hidden preparation (in latency) and the emergence of new forms of organization within the previous social structures until the new forms of organization are matured enough to get visible as dominating differential societal formation. This also means that situations with mixed forms of differentiation are typical and necessary for evolution. In all the shifts are a logic that has to do with de-substantiation making more complex systems formations possible in the differentiation structure.

Luhmann's four historical kinds of basic differentiation

According to Luhmann (2016: 495) only a few forms of basic differentiation have been developed: segmentary, center/periphery, stratified and functional.⁴ There is no theoretical explanation for this catalog of differentiation forms and it cannot be ruled out that new forms will be evolutionary developed (2016: 496). The thesis is not that there is a constant increase of differentiation, but that there is a constant transformation of differentiation forms. In suitable situations the forms become more complex. There does not develop more differentiation, often de-differentiation is seen, but stronger differentiation (2016: 497). In Luhmann's theory the system/environment-differences internally in the social system is brought on a unified principle of differentiation in three different structured historical societies and the four mentioned forms of basic differentiation.

The first historical (and not least prehistorical) differentiation is in segments but also to a lesser degree in centre/periphery. Segments are uniform systems that when they grow, differentiate out uniform systems. In their most developed form they consist in families, villages and trips (Luhmann 2016: 512) and maybe in a center consisting in one village as the trade center (ibid.: 533). They presuppose that the position of individuals in the social order is firmly ascribed and cannot be changed by performance. Segmentation may have been the reason for, or the possibility condition for the transition to agriculture because it requires an appropriate social structure to rely on (ibid.: 513). Such differentiated societies are very resilient if war, famine or disease strikes, even individual surviving segments can begin on a fresh. To separate the different positions of individuals and the differentiation into families, villages and trips from the concept of hierarchy Luhmann calls this fully developed segmentary form for pyramidal (514).

The center/periphery differentiation is a result of the center's out-differentiation, it has, so to speak, at home in the center. The center depends more on the periphery than the reverse is the case. The differentiation form plays an important role in social systems transformation from segmentary to stratified societies, with a separating out a nobility in the center (540). Center/periphery differentiation can work as a differentiation of differentiation forms with a stratified center and a segmentary periphery (541).

Stratified societies are nobility societies based on rank order, which is a family order with award of descent (544). As the upper class no longer recognizes kinship to anyone in the lower class - or perceives them as embarrassing deviations - society can no longer be described as one family system through common ancestry (545). Stratification is reproduced

⁴ I call them basic since Luhmann (2016; 2000) mentions others but only as assigned to them I call basic and which has resulted in distinct kinds of societal differentiation i.e. historical societies.

every time people with different rank are together (546). Within the stratified society differentiations happen by the differentiation out of new systems with a rank in relation to other systems in their internally environment and subordination of other forms of differentiation (549). The stratification regulates inclusion so that one is born into his class and one cannot belong to other classes (515).

Functional differentiation is special in that *specific* functions and their communication media are concentrated in different subsystems with each their *universal responsibility*. Before, the unity of society was secured in stratification where one within the medium truth could accept different forms of truth (e.g., religious, philosophical and rhetorical), within the money medium different currency systems for local trade and trade with others existed, as well as locally different conversion rates. Within the power medium different islands of politically relevant exercise of power, i.e. empire, churches, cities, and territorial states existed. The resulting coordination problems in the internal functions increased, and the reaction was related to the attempt to make a better coordination of functional systems *in themselves* and thus to give them the monopoly on their respective communication medium and renounce coordination *between* them - as the fiction of a continued hierarchical order until well into the 18th century covered this transformation (567).⁵ In the functionally differentiated society, the combination scope of the time dimension and the social dimension is increased in every functionary system, and therefore the individuals get dissemination functions. The economy, for instance, binds all transactions to payments and thereby achieves that access to scarce goods no longer depends on rank, but instead is limited by having to pay another, artificially scarce good, namely money, for them. Several combination possibilities are released in the field of the tension between the time dimension and the social dimension with regard to socially conditioned time constraints. But this benefit must be paid with conditions that can only be determined in the individual functional systems, as uncertain, only currently achievable political agreements, as market prices, as laws that can in principle be changed. The evolutionary attractor that puts this through is the higher complexity (ibid 590). Functional differentiation means that the perspective of *unity* under which a *difference* between system and environment is differentiated out, is the *function* that the differentiated-out system (not its environment) fulfils for the system as a whole (2016: 594; 2012: 88). The functional systems monopolize their functions. They do not count on their environment, which they see as incompetent. The over all system, society, renounces any notion of an overall organization (such as rank order) of the relationship between the functional systems (ibid: 594). But within the functionally differentiated society all the other forms of differentiation still can be found, like segmentation of nation states and hierarchy inside organizations (ibid: 605, see also Clausen 2011).

Social differentiation and media

Social systems consist in communication and have an environment consisting in what does not communicate. With modern language communication about communication became possible and social systems differentiated out as self-referential systems (Luhmann 1995; Tække 2019). Language is the muse of society (Luhmann 2012: 135), and "Language is the structural coupling, that is its task, its function" (Luhmann 2002a: 279). For Luhmann (1995;

⁵ This is an example on lantacy.

2012) language is a medium of communication (see Tække 2011; 2019). Since McLuhan (1967) communication media has been seen as the trigger of social change. Meyrowitz (1985), for instance, used this understanding of media to explain the missing link to understand social change in sociological analysis and created a dynamic understanding of especially Goffman. In the words of Postman (1993: 18): "A new technology does not add or subtract something. It changes everything." In sociology this ecologically medium theory is unacceptable deterministic but only as a kind of linear causality model. Luhmann states that "meaning forms condense only in communication itself" (Luhmann 2012: 249). But still keeps media as a trigger: "If media and techniques of communication change, if the facilities and sensitivities of expression change, if codes change from oral to written communication, and, above all, if the capacities of reproduction and storage increase, new structures become possible, and eventually necessary, to cope with new complexities." (Luhmann 1990: 100). In Luhmann's nondeterministic and nonlinear causality model media still is a trigger even though he cannot point directly on the phenomenological level, i.e., that this media development resulted in this social change, he often points out that only after media X social development Y has been observed. This is also the case in relation to the basic principles of differentiation, and the emergence of the three different differentiated historical societies. In relation to the segmentary differentiated society, he writes that they did not have writing at their disposal (Luhmann 2016: 515). He also writes that every stratified societies had writing at their disposal (2016: 544). In relation to functional differentiated society, he writes: "Only in sufficiently large and complex societies symbolic generalized communication media can be differentiated out. They therefore do not only require the language code as a structure for their self-reference, but in order for the out-differentiation to get started also writing, and for their full development (which we will show) also art of printing books" (Luhmann 2016: 272). And Luhmann does show how this is unfolded but only indirectly and in nondeterministic ways e.g., Luhmann (2016: 581), but he maintains observing that communication techniques like writing and printing is the turning point triggering factors, e.g., Luhmann (2016: 650). In order for new and more improbable differentiation forms to develop, evolutionary developments are demanded for reducing complexity such as the medium of writing (2016: 497).

As a starting point, the acquisition of oral language made communicative self-reference and thereby society possible. Later the written media, print media and analogue electronic media opened up new possibilities for social systems to develop structures of differentiation internal in social systems. Each time a new basic medium of communication is developed there is an initial period (Tække 2019). It appears logical that segmentary differentiation only develops slowly in co-evolution with the language, which also counts for writing and stratification, that both have had many developmental steps. In relation to printing the initial period and convergence with existing media was faster but it still took a couple centuries for social systems to produce new formations (functional differentiation). Analogue electronic media is still new forms of media but already from the beginning they seem to have triggered many developments (Meyrowitz 1985; Tække 2006), but does not seem to have triggered a fundamental change in the functional differentiation. A parallel space for observing, not for action, were created, but perhaps analogue electronic media triggered a stronger segmentary differentiation, such as all women seeing themselves as one political group in relation to equality issues, which only strengthen the functional

differentiation by freeing the women from semantics from old European stratification, and enabling them to vote and work as a frictionless resource for society freed from rank.

Following Paulsen and Tække (in print), in their book about education and Bildung in the digital age, each new media society ecology makes up a new problematic field, tendentially opening up new information and communication situations that call for new norms, tools, theories, practices etc, and also make former norms and theories more or less obsolete. Further they propose that: (1) There is not necessarily just one set of possible new norms waiting to be realised, which will adequately work. (2) When and if one specific 'solution' is developed and actualised, it alters and transmutes the whole ecology, what is possible and not possible, what is needed and what is now obsolete. (3) The new media is developed in and out of the old media society environment, indicating that there is always a level of continuance between different media epochs. (4) The core of media of teaching and society – social complexity per se – is, they argue, semiotic accessibility and flexibility; but if the development of society simply, in each media matrix, runs towards a new equilibrium, then increased flexibility would be pointless. If there is any immanent kind of telos within societal media, such as writing, it is not a fixed equilibrium of social norms, at each stage of human development, but only increased practicable semiotic accessibility and flexibility, enlarging and transforming the capacity of humanity, for good or for bad (ibid).

Returning to Luhmann's vocabulary, the basic differentiation structure is the internal social ecology which ontologically seen by changing alters also the structurally coupled systems levels (psychic and biological systems), like in the co-evolution between the systems levels during the acquisition of oral language. As for now we can only observe if a *latent* specific 'solution' is under developed, that will alter and transmutes the whole ecology (including the external environment of the autopoietic systems).

Transition – media and latency

There is always a transition period where new media of communication already partly is taken in use but with no alteration of the differentiation form of society (at least when it comes to semantic self-descriptions of society). The new possibilities for communication that comes with a new medium⁶ by mutual influence alters both social structures, by making new connections possible, and the medium which is developed i.e., communication finds new ways to use it fitting to its own form experiments. The societal self-descriptions and explanations in the initial period does not show society how it actually functions (Luhmann 2000: 401 ff). Only later and maybe first after a new form of basic differentiation has taken over, society begin to understand its new structures. Maybe this only is possible through the new medium, that now is so developed and coupled into the formation of the new society. Meyrowitz (1985) calls such a transition process where society develops itself in a new medium's scope for communication *effect loops*. In relation to self-description, society and medium couple each other loose from not only old structures but also from old understandings and the new society begin to understand itself more in accordance with its new form of differentiation. The book printing, for instance, for Luhmann (2000: 401), is the precondition for society to find opportunities for communication over the non-communicable and over latent structures and functions. Hierarchies, for instance, assign

⁶ Writing e.g., makes possible to communicate while alone and across time and space (Luhmann 2000: 491).

their own concise semantics⁷ to their latent areas (Luhmann 2000: 396). When it succeeds to de-hierarchise the representation of the system's unit in the system and instead to relating to functions, hierarchies are not abolished, but they are adapted to their function and thereby de-substantialized. They become subject to criticism where no sufficient function is to recognize - e.g. as unequal distribution after the scale of social classes. They are confirmed where their function is evident and where functional equivalents are not in sight - thus above all in formally organized social systems. However, the functional replacement for hierarchy is only the functional orientation itself, and the question is then how it is with its latency needs (Luhmann 2000: 397; 1995: 339).

Problems and latency in the functional differentiated society

Luhmann (2016) points at many problems in the functionally differentiated society among others about the upcoming ecological disaster which makes it clear that planning and coordination is necessary (2016: 617). There is no coupling system (ibid: 625). No coordination of irritation, no central monitoring (ibid.: 626). Observation of irritation is limited to only one functional system (ibid: 28). Irritation is increased due to functional differentiation, while functional systems avoid any form of coordination (ibid: 631). Luhmann (2016: 637) writes that a controlling center cannot exist. But it seems likely that a kind of coordination could be a latent possibility. But in that direction Luhmann seems mostly to think in a returning to a controlling center that could coordinate like in a stratified society. But earlier in the book, Luhmann (2016: 259; 340) opens for the speculation if digital media (the computer) can affect the social structure. The idea is that with every new medium the capacity for processing information is increased. With the alphabet it became possible to make categories and with printing to compare. With the computer the capacity for control (in the meaning of comparing information with memory) is increased again: "with unpredictable consequences for the communication system of society" (Luhmann 2016: 259).

Maybe there are patterns of latency every where around us. Policy is not as autonomous as we refer to, sport is not always competition, and education not always Bildung. Maybe this has been the situation also before digital media? A state like China has never developed into a fully functionally differentiated society and the capitalistic system has always been so strong that it is threatening the functionally differentiation in the USA. But maybe social systems worldwide begin to structure itself within a new differentiation form in the communicative space of digital media. Before putting forward this theory I present a few facts about digital media.

Digital media

The computer changes the relationship between visible surface and invisible depth (Luhmann 2016: 258). The memory is now extremely big and we talk about big data and the control mechanisms in form of machine learning algorithms and Artificial Intelligence (AI). Cambridge Analytica called their method *psychographic segmentation*, but principally it is the way that commercial companies like Facebook and Google, states like China and systems like the Anglo-American system of education use digital media monitoring and profiling users. The method combines big data with theory of persuasion and personality tests

⁷ I would say "vidde og prægnans" in Danish, inspired by Løgstrup (1976).

(Hansen 2018, 24). With this technology companies and states try to predict people's preferences, orientations, emotional constitution, economic conditions and much more. Machine learning algorithms can learn and change based on the data recorded from *an overall set of specifications* (programed logics and values) that allows to predict individual's possible future actions through predictive analytical processes and further through prescriptive analyses to control the individual (e.g. students Williamson 2017: 111). If you want a bank loan, insurance, rent a home, or must have a judgment at the Court, a hospital treatment or, for example, help from the social authorities, the processing of your case takes place in systems increasingly controlled through these algorithms. Various measurement techniques can reveal the individuals' emotional attitude such as facial expressions monitored through webcam, eye tracking, skin temperature and conductivity (Williamson 2017: 135). This is thus an expression of what is more widely called affective computing (Facebook's DeepFace and Google's TensorFlow are examples). An example is WeChat, which, aside from being a chatting and writing tool, has a built-in card service, video conferencing service, payment service and taxi booking service and more. Both the company behind WeChat (Tencent) and the Chinese government can thus keep track of what the 700 million users are doing. In addition, China is developing a "social credit system" that awards each person a number of points based on the person's observed behaviour. Against this background, citizens can be rewarded, punished or prevented from taking part in various activities (Zuboff 2019: 455). For example, parents with a poor credit score might be prevented from enrolling their children in certain schools (Liang et al. 2018, Backer 2019). Also, the Chinese authorities are setting up a lot of surveillance cameras in China (Wong and Dobson 2019). These cameras will, among other things, send information to the national "social credit system". This system ensures that people comply with political requirements and can thus be viewed as the implementation of the world's first digital totalitarian state (Wong and Dobson 2019). It is a positivistic and behaviouristic approach, like Skinner and his idea of a complete program, to determine the wanted behaviour among humans. The machine can predict what citizens' "next move" will be and what they will most probably like, agree with, or vote for. Using this information, a state, for instance, can either order a citizen to do what it wants, or to nudge the citizen. In regard to the latter possibility a state theoretically can nudge a person to think something or buy something that they otherwise would not have done, or for instance, manipulate a person to not vote if the person is predicted to vote for the "wrong" candidate. Even if digital media and algorithms should prove to be overestimated, they are embraced by both states and businesses which means that in any case we will live under their governance. According to Williamson (2017: 145) we are approaching an actual *nudgeocracy* and *governmental psycho-policy* (ibid: 147; Han, 2016).

Discussion - a possible new form of differentiation?

In this analysis and discussion, I am not trying to take a moral or normative stand on whether the digital triggered emerging form of differentiation it is evil or good, wise or stupid, but logically enough the examples of latency come from critical observations. The aim is to use these observations to make probable how the new form is and how it operates.

With digital media the combinatory scope of the time dimension and the social dimension is not decreased in the functionary systems, but proto-controlled and in principle possible to

regulate, either through intervention or through nudging in real time. On the one hand workers are split up in the platform economy (Standing 2011) on the other hand they are steered through algorithms, like also costumers are when it comes to questions in relation to sales, e.g., advertising, search, suggestions of goods, payment, shipping etc. (Dijck et al. 2018). In the process we are in these days, the political power of the EU is trying to regulate the companies, but not to put an end to the AI and algorithms, but to take power over them and regulate them. The EU and other political systems are looking in to a future (which has already begun) with a struggle between different interests, both commercial, civilian and e.g., educational, that the political system try to regulate through algorithms. It seems like an overruling logic of algorithms has become regulator of the communicative infrastructure.

Looking at the public sphere politicians (as well as all sorts of others like commercial interests and other states) via microtargeting can hit not only small distinct segments but individuals with special e.g., political, economic and emotional characteristics, with black posts also called black marketing, which means that different people get different customized messages that others don't get anything to know about. Voters and e.g., costumers and politicians themselves, are treated as individuals, i.e., monitored, calculated and included in the communication with special and narrowed possibilities.

Ben Williamson describes in the book *Big Data in Education*, based on a large empirical basis, how the development of Big Data takes place within the education system. The development has been driven by a cooperation between science, Silicon Valley companies, politicians and large amounts of willing venture capital (Williamson 2017: 12; 15). According to Williamson, these systems have gathered around what can be described as a *sociotechnical imaginary*, which is defined by Jasnoff (2015: 5, here quoted from Williamson 2017: 16) as: "collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology". Such an imaginary pave the way for a strongly operational coupling between the systems that seems to weaken the borders between them. Historically such tight couplings between politic, science and economy have before been seen in the free world. The strongest example is the military industrial complex in the USA after World War II, where the different systems were mesmerized by the one and same closed discourse brought together by computer calculations of power relations during the Cold War (see Edwards 1996).⁸ Now with the imaginary of algorithmic based education and economic and social progress, scientists are funded and get reputation, start-ups get a business and politicians imagine to solve problems of mass education and behavioral problems (and reelection). As follows, this imaginary is instantiated as computer based functional specifications, determining the social and educational life in the school system, forcing the other systems' norms and logics on to the teachers and students (Tække in Print).

This sociotechnical imaginary carries the idea that the algorithms will do the regulation of society better than systems governed by humans. The new 2021 EU regulation of AI, for instance, put different kinds of use of AI into different categories from high risk to no risk. This means that the EU, as the most critical political mover in the world, embrace AI, for

⁸ E.g., calculations of how many trucks and tanks the USSR and the Vietnamese had.

example, in health care and in social care. The latent is that even the EU embrace AI and means that computers over humans better can regulate human conditions.

Functions still exist, hierarchies still exist, segments still exist, center/periphery still exists, but below grows a differentiation form resting on a transverse logic that is functionalistic and instrumentalistic. In the EU, the new AI regulation says that there must be no bias, for example, in relation to gender and minority background - but it is precisely a latent expression of a shift to a new level of de-substantialization. Society is going from more qualitative to more quantitative estimates but paradoxically this happens on the basis of individuals. Some, for instance, need other forms of WCs than others, some can maybe work only one hour a day and some has a cheating behavior that needs to be addressed.

If we distinguish between solid and loosely coupled, one can say that the segmentary differentiation coupled the individual solidly to functions in society which was made possible by this fixation. The stratified differentiation loosely coupled the individual from the inborn or by named given position in society, but with the price that individuals were solidly coupled to a ranking. This de-substantialization made it easier for society to use human contributions with lesser friction in its self-organization. The functional differentiation loosely coupled the individuals from the innate rank and made individuals hyper flexible so that humans stand outside society and can connect to any function in society (although citizenship, education and not least money often are needed). Man has become a homeless resource that may be, maybe not be, included in social processes. The hitherto peak of de-substantialization. According to Luhmann (2016: 496) regressive development is not to exclude. But with the functionally differentiation, society as a system in its own right is stronger than ever, even though the functional systems treat each other stepmotherly and as inner environments sometimes completely lose the ability to reflect on the external environment, not least when it comes to the climate of the Earth as the basis for human life (the host of social systems) and for their psychosocial well-being. It now seems clear that social systems via internal differentiation are parasiting on man (and thereby the world) and thus we also get the explanation for the otherwise unanswerable question of why we gave up the good life as hunters and collectors (Luhmann 2016: 513; Harari 2015): We were communicatively included in the segmentary differentiated society!⁹

The society probably will maintain the functional systems but in a solid coupling to AI and manage humans, or perhaps only manage our contributions, so that they with the algorithms and big data become even more frictionless. With this functionalistic technostructure, that I sociologically will name *algorithmic differentiation*, digital media with their functional architecture provide a gathering point, that can convey between the functional systems on the surface and manage humans' frictionless contributions from the invisible deep. It is an AI, logarithm, rationalist and in double sense, both politically, economically and scientifically functionalism - an instrumentalistic optimistic society with a logic that says that technology can arrange the world (rationally) better than man himself is able to. The social system is loosely coupled from human (ir)rationality but in a solid coupling to AI.

⁹ On this basis the term *anthropocene* seems wrong, it should be *sociocene*.

In relation to the role of center/periphery which has played an important role in the former transitions of the basic differentiation form triggered by communication media, Castells (2003) distinguishes between flow of space and place of space. Flow of space is connecting the educated populations in and between the centers i.e., big urban city areas, and at the same time disconnect the populations living in the outskirts areas, left with only place of space. What Castells did not foresee was that the marginalized areas were also connected by the digital media and interpellated by populist politicians (Müller 2016). Another example is that the center of China (the communist party) invests heavily in surveillance in outskirts areas to (also) control the individuals there. Another form of center is the big five (Facebook, Amazon, Apple, Microsoft and Google) who by the functionalist technostructure control and monitor a huge part of a great number of people working as the periphery.

And everything is controlled on the surface from the depths by the algorithms - caused by our belief that with the computer we can control and create a better world – and maybe it is true.¹⁰

To return to the question about the autonomy of the functional systems, to the question if they will also be subject to the algorithmic differentiation. I will point to the many studies of *medialization*, that show how the various sectors, through the intervention of the media, go through profound structural changes. The theory of mediatization, describes how the interplay between media and different sectors like politic, education, sport and religion alter the conditions and the way these, in Luhmann's terms, functional systems function. The term mediatization refers to the media's transformative role in society and culture. This does not mean that the media alone cause changes, but that the media's behavior triggers or contributes to profound changes in interaction with the internal environment (Hjarvard 2008). An example is when editors help to develop sport tournaments that ensure media popular content (Frandsen 2020). In addition, digitalization has resulted in that media now are playing a strongly changing role in amateur, exercise and lifestyle sports as well as among fans. Also, the algorithms know best how we shall exercise, sleep, eat etc.

Education is an example on a function system showing signs of losing its autonomy as a function system. Tække (in print) tries to observe if logics, values and elementary communication contributions from other systems can enter the communication of the education system. The article concludes that the materiality of digital media might result in an algorithmic induced impact on the communication in the education system enforced by other systems in its environment, why the autonomy of the education system is threatened. According to Andersen and Pors (2021) the school becomes linked to an increasing number of symbolic media so that education becomes only one out of many other concerns, and my point here is, that all functional systems are in a process of becoming controlled from one dominant AI. It looks probable that the sociological logic of *The AI* is that all bias must be erased so humans as the resource *conditio sine qua non* can contribute frictionless to society.

¹⁰ Nobody other than romantic and unrealistic people have before really wanted to go back to an earlier form of differentiation.

I will end this discussion by putting forward one last example to make probable how digital media surrounded by latency already in many years have played a major role in the steering and observation of the world.

In the nineties, the first advanced computer models emerged that could simulate global warming and climate change under different scenarios for economic growth and greenhouse gas emissions. Useful and indispensable as these models are in many ways, they also removed the need for deep critical thinking, according to Watson et al. (2021). They point out that such models portray society as a network of idealized, rational buyers and sellers and ignore the complex social and political realities, even the effects of climate change itself. The models indirect promise is that market-based solutions will always work. This meant that discussions about political strategies were limited to what was convenient for politicians: gradual adjustments of legislation and taxes.

That is, in relation to climate change, that the idea of a net zero is a glare that has emerged from the fact that our ability to model has led us to believe that we with computers can rationally calculate climate action. Computer modeling makes us think we can figure it out. As a modeling the climate becomes an algorithm that can be manipulated. According to Watson et al. (2021), today's net zero strategies will not keep warming below 1.5 degrees, since that has never been the purpose of them. They were and continue to be driven by the need to protect business as usual, not the climate.

The example shows that computer models have already in a long time in latency given us the rationale we act on. Watson et al. (2021) may criticize the models, but probably mostly because the values the algorithms are modeled after have supported the capitalist business as usual - let's burn off now and pay later logic. That the models have been used to argue for postponement of efforts, recognition of probable technological developments, etc. may be true like in relation to education, i.e., Tække (in print) shows the intrusion of a capitalistic logic is at play. But the point is that if wicked problems, are to be solved, AI is probably the only realistic way forward - as in previous media revolutions / shifts in fundamental differentiation form - how the causal relationship may be, we will see a shift we cannot imagine on this side of the paradigm shift. We are maybe looking into a future managed by machine learning algorithms and AI centered around the imaginary of the functionalistic technostructure.¹¹ Computer modeling makes us think that not we, but the computers can figure it out. This logic is lying below the emergence of the algorithmic differentiation of society which is made probable here through the detection of the latency.

Until now the observation of the external environment and of the internal social environment depends on which logics are programed into the algorithms. How this turns out in the future is not to say now, but it is likely that society within the new medium environment will calculate this problem: It is up to society itself to condensate its forms, and we are probably heading towards a new basic differentiation form depended on computers; so, society maybe in the near future, will program itself in a tight coupling to algorithms distributing humans in space and time as frictionless resources. As Harste (2010: 109)

¹¹ Tolkien: One Ring to rule them all, One Ring to find them, One Ring to bring them all, and in the darkness bind them

mentions, the it-technologies makes distant-synchronization of the society's time possible; present time and simultaneity in communication has been subjected to world time.

Conclusion

The paper has tried to reffer Luhmann's theory about how society organize itself through differentiation. The theory is not totally clear and leaves space for interpretation in explaining, among other things, how change occur or is triggered. But it seems clear that over time dynamics which is not regulated through the basic form of differentiation or its sub differentiations, increase the complexity which again triggers a shift in the basic differentiation of society. There are however strong indications that communication media plays a decisive role as precondition for the different kinds of societal differentiation not least for the increased complexity and dynamic, but in a non-linearly causal and non-deterministic way. Historically seen society started with the relatively simple but robust segmentary differentiation which was linked to modern oral language before writing. After the acquisition of writing society were stratified and after the acquisition of printing it became functionary differentiated. This happens with many in-between stages and the interplay of center/periphery differentiations playing a role in all three kinds of basic differentiation forms and in the transformation from one basic form into a new basic form. Each basic form of differentiation makes possible the handling of more complexity than the former.

The paper put forward the contour of a possible new kind of basic societal differentiation, the *algorithmic differentiation*, made possible by digital media. Through digital media society has such an enormous calculation power and monitoring, predicting, distributing, informing, commanding, nudging etc. power, that by this functionally digital architecture, individuals can be differentiated as a kind of resources. Like a new segmentation, but at the same time stratified according to attitude, qualifications, wealth, social history, of approach etc. And functionally differentiated in relation to categorize contributions to different sectors through the symbolic generalized communication media. Last the new basic form of differentiation has a strong center in the *functionalistic technostructure* providing the medium for the algorithmic differentiation, which differentiates all humans as the periphery into individuals that must follow the diverted logics, values and norms of the AI which becomes the ubiquitous center.

We did not think it possible that the computer would be able to beat us in chess, but when it did, we took the position that chess was just calculations. But we have a hard time accepting that with powerful enough computers, everything is just calculations - or that everything in a regime based on calculations becomes calculations - you only measure what can be measured (measurement myopia). In the scenario this paper sets up, it will be a socio-technical size, an AI, and not one or more people who will eventually determine the values and goals that are calculated according to. The latency, or the fact that this development is latent and not explicitly acknowledged, or admitted, stems from a Turing-test romanticism, as it is difficult to imagine that the social merges with the new basic communication medium, of course with the social in its own right, simply in a new communicative space, but where man will still stand outside the social and only be addressed and eventually only perceive himself from how (s)he is addressed socially as a

person. Man will become a kind of gear in a kind of decor like what Paulsen and Tække (2020) with inspiration from Levi Bryant (2014) calls a *Citizen Big Bata Machine*. Presumably, the problem with the in-programmed goals and values in the algorithms will only be a societal childhood disease.¹² It might be cured by the inclusion of more and more goals and values together with programming uncertainty into collaborative algorithms (Arora and Doshi 2020) which is the structural coupling between the different levels of system formation.

There are many unanswered questions like how the observation of the external environment will perform when it is governed by the AI. On the one hand it will not be able to observe the external environment more as it is in itself, than we in principle are able to today. But on the other hand, maybe if the economic interests and the desire for power, fame, dominance and appetite for meat, flights, accommodation, etc. will be kept in check by the AI and the algorithmic differentiation of society, we would maybe stop our race towards self-destruction and extinction?

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¹² That the goal is put in from the beginning is, for instance, the problem with Facebook, because the algorithms are programmed to maximize time spend on the platform and there by enforce polarization and fake news.

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